

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
23 June 2005 (23.06.2005)

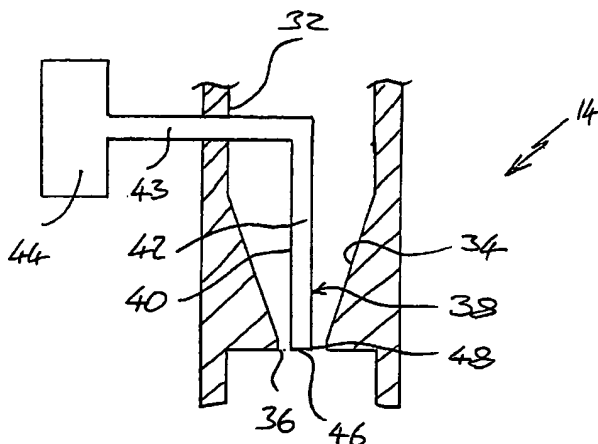
PCT

(10) International Publication Number
WO 2005/056272 A1

- (51) International Patent Classification⁷: **B29C 47/12**, 47/00, 47/20
- (21) International Application Number: PCT/GB2004/005196
- (22) International Filing Date: 10 December 2004 (10.12.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 0328855.2 12 December 2003 (12.12.2003) GB
- (71) Applicant (for all designated States except US): CAMBRIDGE UNIVERSITY TECHNICAL SERVICES LTD [GB/GB]; The Old Schools, Trinity Lane, Cambridge CB2 1TS (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MACKLEY, Malcolm, R. [GB/GB]; 32 Chesterton Hall Crescent, Cambridge CB4 1AP (GB). HALLMARK, Bart [GB/GB]; 28 Post Mill Gardens, Grundisburgh IP13 6UP (GB).
- (74) Agents: GEMMELL, Peter, Alan et al.; Dummett Copp, 25 The Square, Martlesham Heath, Ipswich IP5 3SL (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR PRODUCING CAPILLAR PRODUCTS



(57) Abstract: The invention provides apparatus for producing (2) an extrudate (28) product including a plurality of capillary channel. The apparatus comprises an extruder (18) having an inlet (32), a die (14) including an orifice (36) having a predetermined outer shape and a plurality of needles (38) each having a body (portion 40) including an internal conduit (42) for fluid flow. Each needle further comprises an outlet (46) from the internal conduit at an outlet end. The outlet end of each needle is arranged in a predetermined pattern substantially within the orifice of the die and the conduit of each needle is fluidly connected to a fluid source. In use extrudable material (8) is fed into the extruder through the inlet. The extruder forces the extrudable material around the bodies of the needles towards the die and through the orifice in the die to produce an extrudate having substantially the predetermined outer shape. The needles allow fluid to be drawn from the fluid source (44) through the conduit to be entrained in the extrudate product to form capillaries such that the extrudate product includes capillaries therealong in the predetermined pattern.



- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.